इंटरनेट मानक

Disclosure to Promote the Right To Information

Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

“जानने का अधिकार, जीने का अधिकार”
Mazdoor Kisan Shakti Sangathan
“The Right to Information, The Right to Live”

“पुराने को छोड नये के तरफ”
Jawaharlal Nehru
“Step Out From the Old to the New”

IS 12038-2 (2007): Vitreous and porcelain enamels - Release of lead and cadmium from enamelled ware in contact with food, Part 2: Permissible limits [CHD 9: Ceramicware]

“ज्ञान से एक नये भारत का निर्माण”
Satyanarayan Gangaram Pitroda
“Invent a New India Using Knowledge”

Act Number 22 of 2005
The Indian Parliament
RIGHT TO INFORMATION

Made Available By
Public.Resource.Org

“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”
Bhartṛhari—Nītiśatakam
“Knowledge is such a treasure which cannot be stolen”

BLANK PAGE

BRUTUM FULMEN

IGNORANTIA JURIS NON EXCUSAT

PROTECTED BY COPYRIGHT

IS 12038 (Part 2) : 2007
ISO 4531-2 : 1998

भारतीय मानक

विटरियस और पोर्सिलेन इनेमल — खाद्य सामग्री सपर्क में इनेमलित आधानों से सीसा और कैडमियम विमोचित होना

भाग 2 अनुमत सीमा

(पहला पुनरीक्षण)

Indian Standard

VITREOUS AND PORCELAIN ENAMELS — RELEASE OF LEAD AND CADMIUM FROM ENAMELLED WARE IN CONTACT WITH FOOD

PART 2 PERMISSIBLE LIMITS

(First Revision)

ICS 25.220.50; 67.250; 97.040.60

© BIS 2007

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

January 2007

Price Group 2

Ceramicware Sectional Committee, CHD 9

NATIONAL FOREWORD

This Indian Standard (Part 2) (First Revision) which is identical with ISO 4531-2 : 1998 'Vitreous and porcelain enamels — Release of lead and cadmium from enamelled ware in contact with food — Part 2 : Permissible limits' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Ceramicware Sectional Committee and approval of the Chemical Division Council.

This standard was first published in 1987 as 'Permissible limits and test methods for toxic materials released from enamelware in contact with food'. During revision, the Committee felt that it would be more convenient to split the standard into two parts by adoption of ISO 4531-1 : 1998 and ISO 4531-2 : 1998 on dual number basis. Part 1 covered method of test and Part 2 covered permissible limits.

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to the following International Standard for which Indian Standard also exists. The corresponding Indian Standard which is to be substituted in its place is listed below along with its degree of equivalence for the edition indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 4531-1 : 1998 Vitreous and porcelain enamels — Release of lead and cadmium from enamelled ware in contact with food — Part 1 : Method of test	IS 12038 (Part 1) : 2007 Vitreous and porcelain enamels — Release of lead and cadmium from enamelled ware in contact with food: Part 1 Method of test (*first revision*)	Identical

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Introduction

The problem of lead and cadmium release from enamelled ware requires effective means of control to ensure the protection of the population against possible hazards arising from the use of improperly formulated, applied and fired enamels and/or decorations on the food contact surfaces of enamelled ware used for the preparation, serving and storage of foodstuffs.

As a secondary consideration, different requirements from country to country for the control of the release of toxic materials from the surfaces of enamelled ware present non-tariff barriers to international trade in these commodities. Accordingly, there is a need to establish internationally accepted permissible limits for the release of lead and cadmium from enamelled ware.

An expert panel convened by the World Health Organization (WHO) met in Geneva, in June 1976, and recommended the adoption of sampling methods, testing procedures and limits for the release of toxic materials from ceramic ware [3]. A further meeting was convened by the WHO in November 1979 [4].

The permissible limits given in this International Standard are based on those WHO recommendations, because it was the sense of the WHO meeting that the term "ceramic" includes ceramics, glass, vitreous enamels and glass ceramics. However, the permissible limits have been reduced. As the capability of the industry increases, further efforts will be made to reduce these limits for lead and cadmium release.

If WHO recommendations were to include hot testing at any time then a new edition of this part of ISO 4531 should be considered. For the time being the cold test is also applied for cookware with reduced limit values compared with those specified for other foodware [5].

Indian Standard

VITREOUS AND PORCELAIN ENAMELS — RELEASE OF LEAD AND CADMIUM FROM ENAMELLED WARE IN CONTACT WITH FOOD

PART 2 PERMISSIBLE LIMITS

(First Revision)

1 Scope

This part of ISO 4531 specifies permissible limits for the release of lead and cadmium from enamelled ware intended for use in contact with food (including drinks).

This part of ISO 4531 is applicable to enamelled foodware including tanks and vessels which are intended to be used for the preparation, serving and storage of food.

This part of ISO 4531 also specifies permissible limits for the release of lead and cadmium from a drinking rim.

It is not applicable to ceramic ware, nor to glassware and glass ceramic ware.

2 Normative Reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 4531. For dated references, subsequent amendments to, or revisions of, this publication do not apply. However, parties to agreements based on this part of ISO 4531 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edtion of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 4531-1, *Vitreous and porcelain enamels — Release of lead and cadmium from enamelled ware in contact with food — Part 1: Method of test.*

3 Definitions

For the purposes of this part of ISO 4531 the definitions specified in ISO 4531-1 apply.

4 Permissible limits

4.1 General

A vitreous or porcelain enamelled article shall be recognized as satisfying the requirements of this part of ISO 4531 if the quantities of lead and/or cadmium when determined by the method specified in ISO 4531-1 do not exceed the permissible limits given in 4.2 to 4.4.

However, where a vitreous and porcelain enamelled article does not exceed the values given in 4.2 to 4.4 by more than 50 %, that article shall nevertheless be recognized as satisfying the requirements of this part of ISO 4531 if at least three other articles identical to this one in material, shape, dimensions and decoration are tested under the conditions laid down in ISO 4531-1 with the result that the arithmetic mean of lead and/or cadmium release for those articles does not exceed the permissible limits and none of those articles exceeds the permissible limits by more than 50 %.

4.2 Enamelled ware

Table 1 — Permissible limits of the lead and cadmium release from enamelled ware in contact with food

Type of enamelled ware		Maximum lead release		Maximum cadmium release	
		mg/dm^2	mg/l	mg/dm^2	mg/l
Foodware without cook ware	Flatware	0,8		0,07	
	Hollow ware (up to 3 l)		0,8		0,07
Cook ware	Flatware	0,1		0,05	
	Hollow ware (up to 3 l)		0,4		0,07
Tanks and vessels (capacity over 3 l) tested by flat specimen		0,1		0,05	
NOTE The values given in table 1 are expressed in milligrammes per square decimetre of the reference surface area for flatware and in milligrammes per litre of extraction solution for hollow-ware.					

4.3 Drinking rim

When the drinking rim is tested as specified in ISO 4531-1, enamelled articles shall not cause the substances given in table 2 to be released into the test solution in quantities exceeding those stated.

Table 2 — Permissible limits for drinking rim

Lead mg per article	Cadmium mg per article
2,0	0,20

4.4 Receptacles with lid

If a receptacle is provided with a lid, the receptacle alone and the inner surface of the lid shall each be tested on its own according to ISO 4531-1. The sum of the two extraction values calculated in milligrammes for lead and/or cadmium shall be related, depending on the case concerned, to the surface area or to the volume of the receptacle alone. The permissible limit for the lead and/or cadmium release, in milligrammes per square decimetre or in milligrammes per litre, shall be deemed to be the value applying to the receptacle alone.

Bibliography

[1] ISO 6486-2:1986, *Ceramic ware, glass-ceramic ware and glass flat ware in contact with food – Release of lead and cadmium – Part 2: Permissible limits.*

[2] ISO 7086-2:1982, *Glass hollow ware in contact with food – Release of lead and cadmium – Part 2: Permissible limits.*

[3] WHO/Food Additives 77.44. *Ceramic Foodware Safety, Sampling, Analysis and Limits for Release* (Report of a WHO meeting, Geneva, 8 – 10 June 1976).

[4] WHO/Food Additives HCS/79.7. *Ceramic Foodware Safety, Critical Review of Sampling, Analysis and Limits for Lead and Cadmium Release* (Report of a WHO meeting, Geneva, 12 – 14 November 1979).

[5] FREY, E., and SCHOLZE, H., *Blei- und Cadmiumlässigkeit von Schmelzfarben, Glasuren und Emails in Kontakt mit Essigsäure und Lebensmitteln und unter Lichteinwirkung* [Lead and cadmium release from fused colours, glazes and enamels in contact with acetic acid and foodstuffs and under the influence of light]. Bericht Deutsche Keramische Gesellschaft, 1979 (vol. 56), pp. 293-297.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Copyright

BIS has the copyright of all its publications. No part of these publications may be reproduced in any form without the prior permission in writing of BIS. This does not preclude the free use, in the course of implementing the standard, of necessary details, such as symbols and sizes, type or grade designations. Enquiries relating to copyright be addressed to the Director (Publications), BIS.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

This Indian Standard has been developed from Doc: No. CHD 9 (1437).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *website* : www.bis.org.in

Regional Offices:		Telephones
Central	: Manak Bhavan, 9 Bahadur Shah Zafar Marg NEW DELHI 110002	2323 7617 2323 3841
Eastern	: 1/14 C.I.T. Scheme VII M, V.I.P. Road, Kankurgachi KOLKATA 700054	2337 8499, 2337 8561 2337 8626, 2337 9120
Northern	: SCO 335-336, Sector 34-A, CHANDIGARH 160022	260 3843 260 9285
Southern	: C.I.T. Campus, IV Cross Road, CHENNAI 600113	2254 1216, 2254 1442 2254 2519, 2254 2315
Western	: Manakalaya, E9 MIDC, Marol, Andheri (East) MUMBAI 400093	2832 9295, 2832 7858 2832 7891, 2832 7892

Branches: AHMEDABAD. BANGALORE. BHOPAL. BHUBANESHWAR. COIMBATORE. FARIDABAD. GHAZIABAD. GUWAHATI. HYDERABAD. JAIPUR. KANPUR. LUCKNOW. NAGPUR. PARWANOO. PATNA. PUNE. RAJKOT. THIRUVANANTHAPURAM. VISAKHAPATNAM.

Printed at Simco Printing Press, Delhi